REMARKS

I. Overview

Applicant has reviewed and considered the Final Office Action dated February 23, 2006 and references cited therewith. Claims 1, 4-8 and 10-19 are pending in the present application. Claim 1 has been amended and claim 13 has been canceled to expedite prosecution. The present response is an earnest effort to place all claims in proper form for immediate allowance and to further explain the teachings of the references. Reconsideration and passage to issuance is therefore respectfully requested.

II. Claim Rejections - 35 U.S.C. § 103(a)

A. Alleged Obviousness of Claims 1, 4-8 and 10-19 by De Vuyst et al.

Claims 1, 4-8 and 10-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over De Vuyst et al. (Microbiology, Vol. 142, 1996, pages 817-827). The Examiner states the De Vuyst et al. disclose methods of producing low molecular weight proteins from bacteria by subjecting them to a number of stresses. The Examiner writes that by definition, these proteins are stress response factors. The Examiner writes that the amendment to claim 1 provides no correlation between the measured absorbance and the amount of SRFs present in the filtrate.

1. De Vuyst et al. Does Not Teach That Bacteriocins Are Released from Bacteria as 6 kDa Proteins

Applicant respectfully traverses this rejection. At the outset, Applicant has removed the phrase "quantifying an amount of SRFs present in said filtrate by determining an absorbance at a wavelength of 254 nanometers (nm)" from claim 1. While not conceding to the Examiner's assertion that a lack of correlation exists between the measured absorbance and the amount of SRFs present, Applicant has removed the phrase in order to expedite prosecution.

Applicant respectfully submits that the Office Action did not make out a *prima facie* case of obviousness as the cited reference fails to teach or suggest all of the elements of Applicant's claimed invention. MPEP § 2142. Applicant respectfully disagrees with the Examiner's statement that De Vuyst et al. reference teaches that "subjecting the lactic acid bacteria to any of these stressors results in the release of low molecular weight monomers of bacteriocin

(approximately 6 kDa or less) that oligomerize to be about 30 kDa." *See* Office Action, page 3 (emphasis added). Applicant submits that this is an inaccurate characterization.

Applicant respectfully directs the Examiner's attention to De Vuyst's discussion of the SDS PAGE experiments at page 818, left column, 3rd full paragraph, where the author teaches "[u]nder native conditions, the bacteriocin forms aggregates, the molecular mass of which exceeds 30 kDa. Under reduced conditions, two peptide bands can be visualized by tricine-SDS PAGE, both with a molecular mass less than 6000 Da" (emphasis added).

Thus, De Vuyst et al. does not teach that the bacteriocins are released from bacteria as 6 kDa proteins. Rather, De Vuyst et al. teaches that under denaturing PAGE-SDS conditions, the bacteriocins produce two polypeptide subunits - each having a molecular mass less than 6000 Da. *See* De Vuyst et al. reference at page 818, left column, 3rd full paragraph. Denaturing PAGE denatures proteins into polypeptide subunits according to their molecular weight by disrupting inter- or intramolecular disulfide bonds between cysteine residues.

In contrast, non-reducing SDS-PAGE determines a protein's structure under native conditions. As stated in the De Vuyst et al. reference, the molecular mass of the bacteriocin aggregate under native conditions, that is non-reducing conditions, exceeds 30 kDa. *See* De Vuyst et al. at page 818, left column, 3rd full paragraph. Nowhere does the De Vuyst et al. reference teach that bacteriocins are released from bacteria as 6 kDa proteins rather than as 30 kDa aggregates. Furthermore, the De Vuyst et al. reference does not teach that 6 kDa bacteriocins are capable of modulating the immune system.

Thus, the De Vuyst et al. reference simply does not teach or suggest a stress response product released from bacteria having a molecular weight less than 10 kDa that can be used for modulating the immune system of an animal. De Vuyst et al. does not teach each and every element of claim 1. The Office Action fails to meet its burden of establishing a *prima facie* case of obviousness. Thus, the present invention is not obvious. Claims 4-8, 10-12 and 14-19 dependent on independent claim 1 are likewise not obvious for the reasons argued above, plus the elements in the claims. Claim 13 has been canceled. In light of the foregoing, Applicant requests that the rejection to claims 1, 4-8, 10-12, and 14-19 under 35 U.S.C. §103(a) be withdrawn and reconsidered. Applicant submits that the claims are in form for allowance.

B. Alleged obviousness of claims 1, 4-8, 10-15 and 17-19 by De Vuyst et al. in view of Nanji

Claims 1, 4-8, 10-15 and 17-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over De Vuyst et al., cited above, in view of Nanji (U.S. Patent No. 5,413,785 - IDS-2). The Examiner writes that De Vuyst et al. disclose methods for producing low molecular weight proteins from stressed bacteria (bacteriocins) and suggests adding said proteins to food (*supra*). The Examiner states that Nanji discloses the administration of lactic acid bacteria to humans, livestock and other animals for protection against endotoxin-mediated shock. The Examiner writes that Nanji further discloses that said bacteria should be able to produce anti-microbial substances and/or produce proteinaceous antagonist substances (bacteriocins) since said substances aid in preventing the growth of gram-positive and gram-negative bacteria in the intestine and thereby reducing endotoxin formation (see column 10, lines 40-45). The Examiner writes moreover, the instant claims are drawn to all factors produced with a molecular weight less than 10 kDa in response to nutrient deprivation. The Examiner writes that the amendment to claim 1 provides no correlation between the measured absorbance and the amount of SRFs present in the filtrate.

1. The De Vuyst et al. Reference and Nanji patent Do Not Teach All Elements in the Applicant's Invention

At the outset, Applicant has removed the phrase "quantifying an amount of SRFs present in said filtrate by determining an absorbance at a wavelength of 254 nanometers (nm)" from claim 1. While not conceding to the Examiner's assertion that a lack of correlation exists between the measured absorbance and the amount of SRFs present, Applicant has removed the phrase in order to expedite prosecution. Even if the De Vuyst et al. reference and Nanji patent were combined, the combination would not have suggested the present invention to one skilled in the art because they do not teach all elements of the presently claimed methods. Neither the De Vuyst et al. reference nor the Nanji patent teaches or suggests the release of a stress response product that is less than 10 kDa from bacteria for use in modulating the immune system of an animal as found in the Applicant's claim 1. Thus, the prior art references, alone or combined, fail to teach or suggest all the claim limitations of the present invention. Therefore, claim 1 is not obvious. Claims 4-8, 10-12, 14-15 and 17-19 dependent on independent claim 1 are likewise not

obvious for the reasons argued above, plus the elements in the claims. Claim 13 has been canceled. In light of the foregoing, Applicant requests that the rejection to claims 1, 4-8, 10-12, 14-15 and 17-19 under 35 U.S.C. §103(a) be withdrawn and reconsidered. Applicant submits that the claims are in form for allowance.

C. Alleged Obviousness of Claim 16 by De Vuyst et al. in view of Perdigon

Claim 16 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over De Vuyst et al., cited above, in view of Perdigon et al. (Journal of Food Protection Vol. 53, No. 5, pages 404-410, 1996 - IDS-2). The Examiner writes the teachings of De Vuyst et al. are discussed above. The Examiner notes that Perdigon et al. disclose the use of lactic acid bacteria and the proteins produced therein as immunogens and adjuvants in the generation of protection from enteropathogens (see abstract, page 404, column 2 and pages 408-409). The Examiner writes it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the low molecular weight proteins disclosed by De Vuyst et al. as adjuvants for the induction of an immune response to another co-administered pathogen since Perdigon et al. discusses the use of lactic acid bacteria (and the proteins produced by said bacteria) as adjuvants for enteropathogens (an increased immune response to said enteropathogens was also disclosed) and De Vuyst et al. disclose that proteins produced by lactic acid bacteria have an immunomodulatory effect. The Examiner writes moreover, the instant claims are drawn to all factors produced with a molecular weight less than 10 kDa in response to nutrient deprivation. The Examiner states the amendment to claim 1 provides no correlation between the measured absorbance and the amount of SRFs present in the filtrate. The Examiner writes that the amendment to claim 1 provides no correlation between the measured absorbance and the amount of SRFs present in the filtrate.

1. The De Vuyst et al. and Perdigon References Do Not Teach All Elements in the Applicant's Invention

At the outset, Applicant has removed the phrase "quantifying an amount of SRFs present in said filtrate by determining an absorbance at a wavelength of 254 nanometers (nm)" from claim 1. While not conceding to the Examiner's assertion that a lack of correlation exists between the measured absorbance and the amount of SRFs present, Applicant has removed the phrase in order to expedite prosecution. As discussed above, the De Vuyst et al. reference does

not teach the release of a stress response product that is less than 10 kDa from bacteria for use in modulating the immune system of an animal as found in the Applicant's claim 1. Perdigon fails to supply the teachings that are lacking in De Vuyst et al.. Clearly, the combination of references fail to teach or suggest the limitations of claim 1 and thus cannot render claim 1 obvious. Therefore, claim 16 depending from claim 1 is not obvious for the reasons argued above, plus the elements in the claims. In light of the foregoing, Applicant requests that the rejection to claim 16 under 35 U.S.C. §103(a) be withdrawn and reconsidered. Applicant submits that the claims are in form for allowance.

III. Claim Rejections - 35 U.S.C. §112

A. Alleged New Matter in Claim 13

Claim 13 stands rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Examiner writes thus this is a new matter rejection. The Examiner writes that claim 13 has been amended to recite the limitation "administering the amount of SRFs from about 1000 to 24000 AU of said SRFs/mL as determined at a wavelength of 254 nanometers". The Examiner writes that this phrase does not appear in the specification or original claims as filed and therefore the recited range has no support in the instant specification and therefore this limitation is new matter.

While not conceding that this phrase constitutes new matter, Applicant has canceled claim 13 in order to expedite prosecution rendering this rejection moot. In light of the foregoing, Applicant requests that the rejection to claim 13 under 35 U.S.C. §112 be withdrawn and reconsidered. Applicant submits that the claims are in form for allowance.

B. Alleged New Matter in Claims 1, 4-8 and 10-19

Claims 1, 4-8 and 10-19 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Examiner writes that this is a new matter rejection. "Quantifying an amount of SRFs present in said filtrate by determining an

absorbance at a wavelength of 254 nanometers (nm)" does not appear in the specification or the original claims as filed. Moreover, the Examiner writes, the Applicant points to Example 2 as providing support for the amendment. However, the Examiner writes the cited portion of the specification is drawn to the A_{254} of all of the components of the 10kDa fraction, not just the claimed SRFs as asserted by the Applicant, and writes that therefore this limitation is new matter.

At the outset, Applicant has removed the phrase "quantifying an amount of SRFs present in said filtrate by determining an absorbance at a wavelength of 254 nanometers (nm)" from claim 1. While not conceding that this phrase constitutes new matter, Applicant has removed the phrase in order to expedite prosecution. In light of the foregoing, Applicant requests that the rejection to claim 1, 4-8 and 10-19 under 35 U.S.C. §112 be withdrawn and reconsidered. Applicant submits that the claims are in form for allowance.

C. Alleged New Matter in Claim 13

Claim 13 stands rejected under 35 U.S.C. § 112, first paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Examiner notes that said claim is rendered vague and indefinite by the use of the phrase "as determined at wavelength of 254 nanometers". The Examiner writes thus it is unclear what is being "determined" at the recited wavelength. The Examiner writes consequently, it is impossible to determine the metes and bounds of the claimed invention.

While not conceding that this phrase constitutes new matter, Applicant has canceled claim 13 in order to expedite prosecution rendering this rejection moot. In light of the foregoing, Applicant requests that the rejection to claim 13 under 35 U.S.C. §112 be withdrawn and reconsidered. Applicant submits that the claims are in form for allowance.

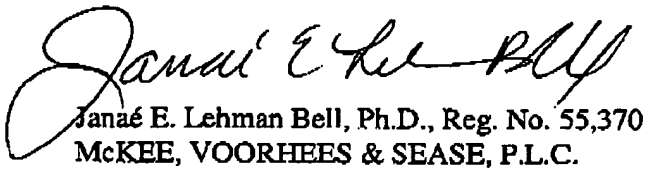
IV. Conclusion

In conclusion, Applicant submits in light of the above amendments and remarks, the claims as amended are in a condition for allowance, and reconsideration is respectfully requested. If it is felt that it would aid in prosecution, the Examiner is invited to contact the undersigned at the number indicated to discuss any outstanding issues.

No fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Reconsideration and allowance is respectfully requested.

Respectfully submitted,



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